NISTIR 6527

Measurement Needs for Fire Safety: Proceedings of an International Workshop

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U.S. Department of Commerce
William M. Daley, Secretary

Technology Administration
Dr. Cheryl L. Shavers, Under Secretary of Commerce for Technology

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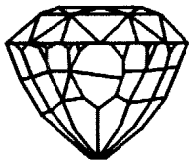

SAFIR

Smoke gas analysis by Fourier transform infrared spectroscopy

Contract no. SMT4-CT96-2136

Final report of the SAFIR project

Edited by Tuula Hakkarainen, VTT Building Technology

Accuracy of FTIR: Interlaboratory trail

Method / parameters	Repeatability standard deviation s_r/m	Reproducibility standard deviation s_R/m
SBI, 1997		
RHR_{max} , THR	5 - 41 %	7 - 60 %
Smoke prod.	7 - 78 %	19 - 114 %
Cone calorimeter, 1997		
RHR_{max} , THR	3 - 55 %	4 - 87 %
Cone calorimeter, 1991-2		
Smoke prod.	6 - 60 %	16 - 100%
This study		
Max gas conc.	4 - 17 %	15 - 47 %
Gas yield (FTIR)	(11,0 % average)	(27,9 % average)
RHR_{max} , THR	4 - 16 %	10 - 34 %
Smoke prod.	4 - 14 %	9 - 18 %

Summary

- Sampling is critical
- A number of measurement methods exists
- GC/MS, MS: organic species, small to large
- FTIR: inorganic species, smaller organics
- Low detection limits ⇨ longer measurement time